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GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			GRANT, ROBERT J	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/803,900

Applicant(s)

ALEYRAZ ET AL.

Examiner

Robert Grant

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 5-10-06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-27 and 29-43 is/are rejected.
- 7) ☒ Claim(s) 12 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 9-7-04. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,2,4,9,16,33,34,36,37,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher et al. (US 6,908,500) in view of Cabasso et al. (US 6,987,163).

As to claim 1, Fisher discloses an power unit for an electronic device (Figure 12), comprising: a fuel cell having a low output voltage (Column 1, lines 35-43); a conversion device coupled to said fuel cell to convert an input voltage to a higher output voltage to operate the electronic device (Element 865). Fisher does not expressly disclose the output voltage of the fuel cell being as low as 0.3v. Cabasso discloses the output voltage of a fuel cell being between 0.3v and 1.0v (Column 18, lines 59-61). It would have been obvious to a person having ordinary skill in the art at the time of this invention to use the fuel cell as disclosed by Cabasso with the device of

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Fisher so that the device can still be operated properly when the fuel cells output is low.

As to Claim 2, Fisher further discloses the power unit in accordance with claim 1, wherein said conversion device comprises a DC/DC converter (Figure 6, element 865).

As to Claim 4, Fisher further discloses the power unit in accordance with claim 1, further comprising a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter (Element 860).

As to Claim 9, Fisher further discloses the power unit in accordance with claim 1, further comprising a control unit structured and arranged to control operation of said conversion device (element 868).

As to Claim 16, Fisher further discloses the power unit in accordance with claim 1, wherein said fuel cell is an individual fuel cell (element 855).

As to Claim 33, Fisher discloses a process for control and regulation of an electronic device powered by a fuel cell (Figure 12), said process comprising: coupling a fuel cell to an electronic device (elements 855 and 865); boosting an output voltage of the fuel cell to a level required by the electronic device (Element 865). Fisher does not expressly disclose the output voltage of the fuel cell being as low as 0.3v. Cabasso

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discloses the output voltage of a fuel cell being between 0.3v and 1.0v (Column 18, lines 59-61). It would have been obvious to a person having ordinary skill in the art at the time of this invention to use the fuel cell as disclosed by Cabasso with the device of Fisher so that the device can still be operated properly when the fuel cells output is low.

As to Claim 34, Fisher discloses the process in accordance with claim 33, wherein the boosting of the output voltage is performed by a DC/DC converter (Element 865).

As to Claim 36, Fisher the process in accordance with claim 34, further comprising supplementing the output of the DC/DC converter with a backup battery, whereby the fuel cell is utilized at a maximum efficiency capacity (Elements 855, 865 and 860).

As to Claim 37, Fisher discloses the process in accordance with claim 36, further comprising boosting a voltage of said backup battery to a necessary level via a battery up converter (Element 865).

As to Claim 41, Fisher the process in accordance with claim 33, further comprising controlling the individual components of the power unit via a control unit (Element 868).

3. Claims 8, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher et al. in view of Cabasso et al. in further view of Woodward et al (US 4,563,630).

As to Claim 8, Fisher in view of Cabasso disclose the limitations of claim 1, which this claim is dependent upon. Neither Fisher nor Cabasso disclose further comprising a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

As to Claim 40, Fisher in view of Cabasso disclose the limitations of claim 33, which this claim is dependent upon. Neither Fisher nor Cabasso disclose process of consuming additional load from the fuel cell via a dump resistor coupled to the conversion device that is structured and arranged to consume additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

4. Claims 13-15, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher et al. in view of Cabasso et al. in further view of Yoon et al. (US 6,160,382).

As to Claim 13, Fisher in view of Cabasso disclose all the limitation of claim 9, but do not expressly disclose an A/D convert or a D/A converter. Yoon discloses an A/D converter structured to receive voltage and current data from said conversion device (Figure 4, element 80); a D/A converter structured to output reference voltage and current levels (Element 30); and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter (Element 10). It would have been obvious to one of ordinary skill in the art at the time of this invention to combine the teaching of Yoon's A/D and D/A converter with the device of Fisher in view of Cabasso, in order to monitor the status of the device as well as the controlling the fuel cell and battery.

As to Claim 14, Yoon further discloses the power unit in accordance with claim 13, further comprising: a charger interface coupled to said data processor (column 8, lines 42-48); and a battery monitor coupled to said charger interface structured and arranged to collect battery data (Column 8, lines 29-42).

As to Claim 15, Yoon further discloses the power unit in accordance with claim 13, further comprising a host interface structured to provide two-way communication between said control unit and the electronic device (Figure 4, element 10).

As to Claim 42, Fisher in view of Cabasso disclose all the limitations of claim 41, but neither expressly disclose two-way communication between the control unit and the

electronic device. Yoon discloses a monitoring and controlling device which utilizes two-way communication between the control unit and a battery (Figure 1, element 10). It would have been obvious to a person having ordinary skill in the art to modify Fisher with the teachings of Yoon, and provide communication between the cell phone (element 890) and the control circuit (element 868), in order to know the status of the cell phones power demand, as well as informing the cell phone of a low power situation.

5. Claims 17, 29-32, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher et al. in view of Yoon et al.

As to Claim 17, Fisher discloses a power unit for an electronic device, comprising: a fuel cell (Figure 12); a control unit structured and arranged to control and regulate said fuel cell (elements 825 and 868). Fisher does not expressly disclose two-way communication between the control unit and the electronic device. Yoon discloses a monitoring and controlling device which utilizes two-way communication between the control unit and a battery (Figure 1, element 10). It would have been obvious to a person having ordinary skill in the art to modify Fisher with the teachings of Yoon, and provide communication between the cell phone (element 890) and the control circuit (element 868), in order to know the status of the cell phones power demand, as well as informing the cell phone of a low power situation.

As to claim 29, Yoon discloses the power unit in accordance with claim 17, said control unit comprising: an A/D converter structured to receive voltage and current data from



said conversion device (Figure 4, element 80); a D/A converter structured to output reference voltage and current levels (Element 30); and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter (element 10).

As to Claim 30, Yoon discloses the power unit in accordance with claim 29, further comprising: a charger interface coupled to said data processor (Column 8, lines 42-48); and a battery monitor coupled to said charger interface structured and arranged to collect battery data (Column 8, lines 29-42).

As to Claim 31, Yoon discloses the power unit in accordance with claim 29, further comprising a host interface structured to provide two-way communication between said control unit and the electronic device (figure 4, element 10).

As to Claim 32, Fisher discloses the power unit in accordance with claim 17, wherein said fuel cell is an individual fuel cell (Element 855).

As to Claim 43, Fisher discloses a process for control and regulation of an electronic device powered by a fuel cell, said process comprising: coupling a fuel cell to an electronic device (Figure 12); controlling operation of the fuel cell via a control unit (element 868). Fisher does not expressly disclose two-way communication between the control unit and the electronic device. Yoon discloses a monitoring and controlling

device which utilizes two-way communication between the control unit and a battery (Figure 4, element 10). It would have been obvious to a person having ordinary skill in the art to modify Fisher with the teachings of Yoon, and provide communication between the cell phone (element 890) and the control circuit (element 868), in order to know the status of the cell phones power demand, as well as informing the cell phone of a low power situation.

6. Claims 18,19,21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Yoon in further view of Cabasso.

As to Claim 18, Fisher in view of Yoon further discloses the power unit in accordance with claim 17, wherein said fuel cell is an individual fuel cell having a low output voltage ( Fisher Column 1, lines 35-43); a conversion device coupled to said fuel cell to convert an input voltage to a higher output voltage to operate the electronic device (Fisher Element 865). Fisher does not expressly disclose the output voltage of the fuel cell being as low as 0.3v. Cabasso discloses the output voltage of a fuel cell being between 0.3v and 1.0v (Column 18, lines 59-61). It would have been obvious to a person having ordinary skill in the art at the time of this invention to use the fuel cell as disclosed by Cabasso with the device of Fisher so that the device can still be operated properly when the fuel cells output is low.

As to Claim 19, Fisher further discloses the power unit in accordance with claim 18 wherein said conversion device comprises a DC/DC converter (Element 865).

As to Claim 21, Fisher discloses the power unit in accordance with claim 18, further comprising a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter (Element 860).

As to Claim 22, Fisher discloses the power unit in accordance with claim 21, further comprising a battery up converter (Element 865) coupled to said backup battery to boost a voltage of said backup battery to a necessary level (element 860).

As to Claim 23, Fisher discloses the power unit in accordance with claim 22, wherein said control unit is coupled to said conversion device, backup battery, and battery up converter in order to control and regulate the energy supplied to the electronic device (Element 868).

7. Claims 6,7,38,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Cabasso in further view of Schmidt et al. (US 6,858,335).

As to claim 6, Fisher in view of Cabasso disclose the power unit in accordance with claim 4, but do not expressly disclose a heating device, although it is clear from both Fisher and Cabasso that the temperature of the fuel cell effects it's output. Schmidt discloses a heating device coupled to said backup battery and to said fuel cell that is

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structured and arranged to heat said fuel cell (Column 6, lines 50-58). It would have been obvious to one having ordinary skill in the art at the time of this invention to include a heating device as taught by Schmidt in order to heat the fuel cell so that the desired output can be obtained.

As to Claim 7, Schmidt discloses the power unit in accordance with claim 6, further comprising a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature (Figure 2, element 55).

As to Claim 38, Fisher in view of Cabasso disclose the power unit in accordance with claim 4, but do not expressly disclose a heating device, although it is clear from both Fisher and Cabasso that the temperature of the fuel cell effects it's output. Schmidt discloses heating the fuel cell via the backup battery (column 8, lines 65-66). It would have been obvious to one having ordinary skill in the art at the time of this invention to include a heating device as taught by Schmidt in order to heat the fuel cell so that the desired output can be obtained.

As to Claim 39, Schmidt discloses the process in accordance with claim 38, further comprising monitoring fuel cell temperature (Figure 2, element 55).

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8. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Yoon in view of Cabasso in further view of Schmidt.

As to Claim 24, Fisher, Yoon and Cabasso disclose all the limitation of claim 21, but do not expressly disclose a heating device, although it is clear from both Fisher and Cabasso that the temperature of the fuel cell effects it's output. Schmidt discloses a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell (Column 6, lines 50-58). It would have been obvious to one having ordinary skill in the art at the time of this invention to include a heating device as taught by Schmidt in order to heat the fuel cell so that the desired output can be obtained.

As to Claim 25, Schmidt further discloses, the power unit in accordance with claim 24, further comprising a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature (Figure 2, element 55).

As to Claim 26, Schmidt further discloses the power unit in accordance with claim 25, wherein said control unit is coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell (column 6, lines 50-58).

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Yoon in view of Cabasso in further view of Woodward.

As to Claim 27, Fisher in view of Cabasso disclose the limitations of claim 18, which this claim is dependent upon. Neither Fisher nor Cabasso disclose a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

10. Claims 3,5,10,35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Cabasso in further view of Komatsu et al. (US 6,917,179).

As to Claim 3, Fisher discloses all the limitations of claim 2, but does not expressly disclose an up converter coupled to the DC/DC converter. Komatsu discloses an up converter (figure 1, element 12) coupled to said DC/DC converter (Element 19) in order to boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Fisher in order to further increase the voltage outputted to the device.

As to Claim 5, Komatsu discloses the power unit in accordance with claim 4, further comprising a battery up converter (figure 1, element 12) coupled to said backup battery to boost a voltage of said backup battery to a necessary level.

As to Claim 10, Fisher discloses all the limitations of claim 9, and further discloses a backup battery connected to the DC/DC converter, but does not expressly disclose an up converter coupled to the DC/DC converter. Komatsu discloses a device in order to at least supplement the output of DC/DC converter (Figure 1, element 19); and an up converter (Element 12) . It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Fisher in order to further increase the voltage outputted to the device.

As to Claim 35, Fisher discloses the process in accordance with claim 34, but does not expressly disclose an up converter. Komatsu discloses wherein the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter (figure 1, element 19) to the higher voltage via an up converter (element 12) to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Fisher in order to further increase the voltage outputted to the device.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Yoon in further view of Cabasso in further view of Komatsu.

As to Claim 20, fisher discloses the process in accordance with claim 19, but does not expressly disclose an up converter. Komatsu discloses wherein the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter (figure 1, element 19) to the higher voltage via an up converter (element 12) to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Fisher in order to further increase the voltage outputted to the device.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Cabasso in further view of Komatsu in further view of Schmidt.

As to Claim 11, Fisher discloses the power unit in accordance with claim 10, but does not expressly disclose a heating system. Schmidt discloses a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell (figure 2, elements 74 and 75); and a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature (element 55), wherein said control unit is further coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell (Column 6, lines 50-58). It would have been obvious to one having ordinary skill in the art at the time of



this invention to include a heating device as taught by Schmidt in order to heat the fuel cell so that the desired output can be obtained.

***Allowable Subject Matter***

13. Claims 12 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Claims 12 and 28 recite, inter alia, wherein the control unit is coupled to said dump in order to control and regulate operation of said converter. The above limitation is not disclosed, taught, or suggested in the art of record, nor would it have been obvious to one of ordinary skill in the art to modify the art of record to meet the above limitation.

***Response to Arguments***

15. Applicant's arguments filed 5-10-06 have been fully considered but they are not persuasive.

In response to applicant's argument that the DC-DC converter of Fisher is capable of boosting an input voltage as low as 0.3v, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the

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structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Therefore, looking at the two references one of ordinary skill in the art would see the benefit of modifying Fishers DC-DC converter to allow it to operate at a low voltage value, such as one that Cabasso discloses.

In response to applicant's argument that Woodward is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Woodward is concerned with controlling power generation and power supply, and is therefore in the same field as a fuel cell control device, which is also generating power.

As for the Arguments concerning claims 17 and 43, Yoon teaches two way communication between a control unit and a battery. When taking the teachings of Yoon, and taking into account Fischer and Cabasso, it would be obvious to modify the device so that communication between the cell phone and the control circuit would be permitted so that the power demands of the phone are known as well as the phone being informed as to the remaining power available.

In response to applicant's argument that Komatsu is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Komatsu is concerned with DC-DC conversion, which is directly related to Fisher who also deals with DC-DC conversion.

### ***Conclusion***

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Grant whose telephone number is 571-272-2727. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RG

  
KARL EASTHOM  
SUPERVISORY PATENT EXAMINER